AMENDMENTS TO THE CLAIMS:

Please amend claims 1-3, 5, 12, 16, 22-24, 31-34, 54-58, 61-63 and 65-71. Please cancel claims 4 and 11. Please add claims 74-98. This listing of claims will replace all prior versions, and listings of claims, in the application.

LISTING OF CLAIMS:

1. (Currently amended) A protein-based composition, comprising a compound that comprises:

at least one therapeutic domain comprising a peptide or protein, wherein the at least one therapeutic domain has at least one extracellular enzyme or enzyme inhibitor activity that can prevent the infection of a target cell by a pathogen by blocking entry into the target cell; and

at least one anchoring domain comprising a peptide or protein, wherein the anchoring domain can bind ~~at or near~~ to a molecule on the surface of the target cell.

2. (Currently amended) The composition of claim 1, wherein the target cell is an epithelial cell or endothelial cell and the anchoring domain can bind ~~at or near~~ to a molecule on the surface of the epithelial or endothelial cell.

3. (Currently amended) The composition of claim 2, wherein the target cell is an epithelial cell and the anchoring domain can bind ~~at or near~~ to a molecule on the surface of the epithelial cell.

4. (Canceled)

5. (Currently amended) The composition of claim [[4]] 3, wherein the epithelial cell surface molecule is a glycosaminoglycan (GAG).

6. (Previously presented) The composition of claim 5, wherein the anchoring domain can bind heparin or heparan sulfate.

7. (Previously presented) The composition of claim 6, wherein the anchoring domain is a peptide.

8. (Previously presented) The composition of claim 7, wherein the peptide comprises a GAG-binding amino acid sequence of a naturally-occurring protein, or a sequence that is substantially homologous to the GAG-binding sequence of a naturally-occurring protein.

9. (Previously presented) The composition of claim 8, wherein the peptide comprises the GAG-binding amino acid sequence of a mammalian protein.

10. (Previously presented) The composition of claim 9, wherein the peptide comprises the GAG-binding amino acid sequence of a human protein.

11. (Canceled)

12. (Currently amended) The composition of claim [[11]] 10, wherein the amino acid sequence comprises the GAG-binding amino acid sequence of human platelet factor 4 (SEQ ID NO:2), human interleukin 8 (SEQ ID NO:3), human antithrombin III (SEQ ID NO:4), human apoprotein E (SEQ ID NO:5), human angio-associated migratory protein (SEQ ID NO:6), or human amphiregulin (SEQ ID NO:7), or a sequence that is substantially homologous thereto.

13. (Previously presented) The composition of claim 1, wherein the pathogen is a virus.

14. (Previously presented) The composition of claim 13, wherein the virus is an influenza virus.

15. (Canceled)

16. (Currently amended) The composition of claim 13, wherein the ~~at least one~~ therapeutic domain comprises a protease inhibitor.

17. (Previously presented) The composition of claim 16, wherein the protease inhibitor inhibits an enzyme involved in processing a viral protein.

18. (Previously presented) The composition of claim 17, wherein the enzyme involved in processing a viral protein is a host enzyme.

19. (Previously presented) The composition of claim 18, wherein the protease inhibitor is a serine protease inhibitor.

20. (Previously presented) The composition of claim 19, wherein the serine protease inhibitor is aprotinin, leupeptin, soybean protease inhibitor, e-aminocaproic acid, or n-p-tosyl-L-lysine.

21. (Canceled)

22. (Currently amended) The composition of claim 1, wherein the therapeutic domain is an enzyme or an active portion thereof, wherein the active portion retains enzymatic activity and does not comprise the full length enzyme.

23. (Currently amended) The composition of claim 22, wherein the ~~therapeutic domain~~ enzyme is a sialidase.

24. (Currently amended) The composition of claim ~~20~~ 23, wherein the sialidase is or is substantially homologous to ~~at least a portion of~~ at least one viral sialidase, at least one bacterial sialidase, or at least one eukaryotic sialidase~~, wherein the portion of the at least one viral sialidase, at least one bacterial sialidase or at least one eukaryotic sialidase comprises essentially the same activity as the corresponding viral sialidase bacterial sialidase or eukaryotic sialidase~~.

25-30. (Canceled)

31. (Currently amended) The composition of claim 24, wherein the sialidase is or is substantially homologous to ~~at least a portion of~~ at least one eukaryotic sialidase~~, wherein the portion of the at least one eukaryotic sialidase comprises essentially the same activity as the eukaryotic sialidase~~ .

32. (Currently amended) The composition of claim 31, wherein the sialidase is or is substantially homologous to ~~at least a portion of~~ at least one human sialidase~~, wherein the portion of the at least one human sialidase comprises essentially the same activity as the human sialidase~~.

33. (Currently amended) The composition of claim 32, wherein the human sialidase is or is substantially homologous to the NEU1, NEU3, NEU2, or NEU4 genes.

34. (Currently amended) The composition of claim 33, wherein the sialidase is or is substantially homologous to the NEU2 or NEU4 genes and comprises a sequence of amino acids that is or is substantially homologous to the sequence of amino acids set forth in SEQ ID NO:8 or SEQ ID NO:9.

35-46. (Canceled)

47. (Original) A pharmaceutical formulation comprising the composition of claim 1.

48-49. (Canceled)

50. (Currently amended) A method for the prevention, prophylaxis or treatment of ~~treating or preventing~~ influenza infection, comprising: applying a therapeutically effective amount of the composition of claim 1 to ~~epithelial~~ target cells of a subject.

51-53. (Canceled)

54. (Currently amended) A method of using a sialidase ~~to prevent or impede~~ for the prevention, prophylaxis or treatment of infection by a pathogen, comprising:
~~providing a composition that comprises at least one sialidase; and~~
applying a therapeutically effective amount of the composition of claim 23 to ~~epithelial~~ target cells of a subject.

55. (Currently amended) The method of claim 54, wherein the sialidase is or is substantially homologous to ~~at least a portion of~~ at least one viral sialidase, at least one bacterial sialidase, or at least one eukaryotic sialidase~~, wherein the portion of the at least one viral sialidase, at least one bacterial sialidase or at least one eukaryotic sialidase comprises essentially the same activity as the corresponding viral sialidase, bacterial sialidase or eukaryotic sialidase~~.

56. (Currently amended) The method of claim 55, wherein the sialidase is or is substantially homologous to ~~at least a portion of~~ at least one eukaryotic sialidase~~, wherein the portion of the at least one eukaryotic sialidase comprises essentially the same activity as the eukaryotic sialidase~~.

57. (Currently amended) The method of claim 56, wherein the subject is a human subject and the sialidase is or is substantially homologous to ~~at least a portion of~~ at least one human sialidase~~, wherein the portion of the at least one human sialidase comprises essentially the same activity as the human sialidase~~.

58. (Currently amended) The method of claim 57, wherein the sialidase is or is substantially homologous to the NEU2 or NEU4 genes and comprises a sequence of amino acids that is or is substantially homologous to the sequence of amino acids set forth in SEQ ID NO:8 or SEQ ID NO:9.

59-60. (Canceled)

61. (Currently amended) The composition of claim 24, wherein the sialidase is or is substantially homologous to ~~at least a portion of~~ at least one bacterial sialidase~~, wherein the portion of the at least one bacterial sialidase comprises essentially the same activity as the bacterial sialidase~~.

62. (Currently amended) The composition of claim 61, wherein the ~~at least one~~ bacterial sialidase is selected from the group consisting of *Vibrio cholerae* sialidase, *Clostridium perfringens* sialidase, *Actinomyces viscosus* sialidase and *Micromonospora viridifaciens* sialidase.

63. (Currently amended) The composition of claim 61, ~~wherein the at least one bacterial sialidase is~~ comprising only one bacterial sialidase.

64. (Previously presented) The composition of claim 63, wherein the bacterial sialidase is *Actinomyces viscosus* sialidase.

65. (Currently amended) The composition of claim 1, further comprising at least one peptide linker that links the ~~at least one~~ anchoring domain to the ~~at least one~~ therapeutic domain.

66. (Currently amended) The composition of claim 65, wherein the ~~at least one~~ peptide linker comprises at least one glycine residue.

67. (Currently amended) The composition of claim 65, wherein the ~~at least one~~ peptide linker comprises the sequence (GGGGS)n, where n is a whole number from 1 to 20.

68. (Currently amended) The composition of claim 1, wherein the ~~at least one~~ anchoring domain is N-terminal to ~~the at least one~~ a therapeutic domain.

69. (Currently amended) The composition of claim 1, wherein the ~~at least one~~ anchoring domain is C-terminal to ~~the at least one~~ a therapeutic domain.

70. (Currently amended) The composition of claim 1, ~~wherein the at least one anchoring domain is~~ comprising at least two anchoring domains.

71. (Currently amended) The composition of claim 70, wherein at least one of the ~~at least two~~ anchoring domains is N-terminal to ~~the at least one~~ a therapeutic domain and at least one of the ~~at least two~~ anchoring domains is C-terminal to ~~the at least one~~ a therapeutic domain.

72. (Previously presented) The pharmaceutical formulation of claim 47 that is formulated as a spray.

73. (Previously presented) The pharmaceutical formulation of claim 47 that is formulated as an inhalant.

74. (New) The composition of claim 3, wherein the epithelial cell is a respiratory epithelial cell, an adenoid epithelial cell or a bronchial epithelial cell.

75. (New) The composition of claim 13, wherein the virus is selected from among parainfluenza and respiratory syncytial virus

76. (New) The pharmaceutical formulation of claim 47 that is formulated as a suspension, a solution for injection or a solution for oral administration.

77. (New) The pharmaceutical formulation of claim 47 that is formulated as a solution for eye drops.

78. (New) The pharmaceutical formulation of claim 47 that is formulated as a cream, salve, gel, or ointment.

79. (New) The pharmaceutical formulation of claim 47 that is formulated as a tablet, capsule or lozenge.

80. (New) A delivery system, comprising the pharmaceutical formulation of claim 72 or claim 73.

81. (New) The delivery system of claim 80 that is a nebulizer, an atomizer or a dropper bottle.

82. (New) The method of claim 55, wherein the sialidase is or is substantially homologous to at least one bacterial sialidase.

83. (New) The method of claim 82, wherein the bacterial sialidase is selected from the group consisting of *Vibrio cholerae* sialidase, *Clostridium perfringens* sialidase, *Actinomyces viscosus* sialidase and *Micromonospora viridifaciens* sialidase.

84. (New) The method of claim 83, wherein the bacterial sialidase is *Actinomyces viscosus* sialidase.

85. (New) The method of claim 54, wherein the applying is by use of a nasal spray.

86. (New) The method of claim 54, wherein the applying is by use of an inhaler.

87. (New) The method of claim 54, wherein the applying is by oral administration.

88. (New) The method of claim 54, wherein the applying is performed from once to four times a day.

89. (New) The method of claim 54, wherein the pathogen is a bacterium.

90. (New) The method of claim 54, wherein the pathogen is a virus.

91. (New) The method of claim 90, wherein the virus is selected from among influenza, parainfluenza and respiratory syncytial virus.

92. (New) The method of claim 91, wherein the virus is influenza virus.

93. (New) The method of claim 54, wherein the subject is a human subject or an animal subject.

94. (New) The composition of claim 12, wherein the therapeutic domain is or is substantially homologous to:

a human sialidase selected from among the NEU1, NEU3, NEU2, or NEU4 genes; or

a bacterial sialidase selected from among *Vibrio cholerae* sialidase, *Clostridium perfringens* sialidase, *Actinomyces viscosus* sialidase and *Micromonospora viridifaciens* sialidase.

95. (New) The composition of claim 1, comprising an additional domain selected from among proteins, peptides, carbohydrates, fatty acids, lipids, steroids, nucleotides, nucleotide analogues, nucleic acid molecules, nucleic acid analogues, peptide nucleic acid molecules, organic molecules, and polymers.

96. (New) The composition of claim 95, wherein the additional domain is a purification domain, a domain that improves the solubility or distribution of the compound, a linking domain, a stability-conferring domain, a domain that contributes to the three dimensional structure of the compound, or a domain that increases the size of the compound.

97. (New) The composition of claim 96, wherein the domain is a linking domain that links the therapeutic and anchoring domains.

98. (New) The composition of claim 96, wherein the domain is a linking domain that links chemical moieties to the compound.